Department of Defense INSTRUCTION

NUMBER 8120.2

SUBJECT: Automated Information System (AIS) Life-Cycle
Management (LCM) Process, Review and Milestone Approval Procedures

References:

> (a) DoD Instruction 7920.2, "Automated Information System
> (AIS) Life-Cycle Management Review and Milestone Approval
> Procedures," March 7, 1990 (hereby canceled)

> (b) DoD Manual 7920.2-M, "Automated Information System
> Life-Cycle Management Manual," March 1990, authorized by
> DoD Instruction 7920.2, March 7, 1990

> (c) DoD Directive 8120.1, "Life-Cycle Management of
> Automated Information Systems (AISs)," xxxx xx, 1992

> (d) DoD Directive 5137.1, "Assistant Secretary of Defense
> for Command, Control, Communications, and Intelligence,"
> February 12, 1992

> (e) through (n), see enclosure 1

A. PURPOSE

   This Instruction:

   1. Updates reference (a).

   2. Authorizes the publication of a manual, DoD 8120.2-M (to
replace DoD Manual 7920.2-M, reference (b), when published) to
implement uniform procedures for conducting AIS LCM activities and
provide guidelines for preparing AIS LCM documentation.

   3. Requires submission of Quarterly Major Automated Information
System Status Reports, RCS: DD C3I(Q) 1799.

B. APPLICABILITY AND SCOPE

   This Instruction:

   1. Applies to the Office of the Secretary of Defense (OSD); the
Military Departments (including their National Guard and Reserve
components); the Chairman, Joint Chiefs of Staff and Joint Staff; the
Unified and Specified Commands; the Inspector General of the
Department of Defense; the Defense Agencies; and the DoD Field
Activities (hereafter referred to collectively as "the DoD
Components").

   2. Governs AIS LCM review and milestone approval for AIS programs
as defined in and subject to DoD Directive 8120.1 (reference (c)).

   3. Shall be adapted by lead acquisition authorities for use in the
LCM review and milestone approval of delegated major AIS programs and
major and nonmajor AISs for which they are designated the lead
acquisition authority.

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IATAC
Information Assurance Technology Analysis Center
3190 Fairview Park Drive
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13. ABSTRACT *(Maximum 200 Words)*
This enclosure describes the Life-Cycle Management (LCM) Phases and Milestones for the design, development, deployment and operation of Automated Information Systems (AISs), as defined in DoD Directive 8120.1 (reference (c)). The activities and conditions to initiate and complete each phase and milestone are defined. LCM milestones are to ensure user requirements are met and provide a standard set of decision points for senior management involvement.

14. SUBJECT TERMS
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C. DEFINITIONS

    Terms used in this Instruction are defined in enclosure 2.

D. POLICY

    This instruction implements policies stated in DoD Directive 8120.1 (reference (c)).

E. RESPONSIBILITIES

    1. The Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)) shall:

        a. Review and validate each major AIS program designated for oversight by the Major Automated Information System Review Council (MAISRC) (as authorized by DoD Directive 5137.1, reference (d)), for compliance with DoD LCM policy, procedures and standards for AISS. Specific items of interest in the review and validation process are assigned to the MAISRC members, as delineated below.

        b. Establish and issue procedures to periodically determine the status of each major AIS program and detect potential problems.

        c. Develop, issue and maintain DoD 7920.2-M (reference (b)) to implement uniform procedures for conducting AIS LCM activities and provide guidelines for preparing AIS LCM documentation.

        d. Ensure the Deputy Assistant Secretary of Defense (Defense wide Command, Control, and Communications) (DASD(D-WC3)):

            (1) Determines compliance of AIS program planning with DoD telecommunications policy and procedures.

            (2) Develops and maintains AIS program telecommunications guidance for publication in DoD 7920.2-M (reference (b)). Input for DoD 7920.2-M will be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

        e. Ensure the Deputy Assistant Secretary of Defense (Counterintelligence and Security Countermeasures) (DASD(CI&SCM)):

            (1) Determines compliance of AIS program planning with appropriate DoD security and data protection policy and procedures.

            (2) Develops and maintains AIS program security guidance for publication in DoD 7920.2-M (reference (b)). Input for DoD 7920.2-M will be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

        f. Serve as the Milestone Decision Authority (MDA). As the MDA, shall:

            (1) Sign the System Decision Memorandum (SDM) issuing decisions and direction to the DoD Component.

            (2) Serve as, or designate, the MAISRC Chair. The MAISRC Chair shall:

                (a) Convene and preside over MAISRC meetings.

                (b) Seek consensus among MAISRC members and

resolution of issues before issuance of LCM review decisions.

       (c) Designate the MAISRC Executive Secretary.

       (d) Ensure the MAISRC members:

       1 Review each major AIS program and
provide recommendations to the MDA.

       2 Participate in MAISRC meetings and
deliberations.

       3 Coordinate on SDMs.

       4 Designate a representative to
serve on the MAISRC staff for each major AIS program.

       (e) Ensure the MAISRC Executive Secretary:

       1 Provides administrative support
for MAISRC operations and proceedings.

       2 Coordinates and schedules each
MAISRC review.

       3 Communicates LCM review
requirements to the OSD PSAs, the DoD Components and each major AIS
Program Manager, and facilitates resolution of AIS program specific
issues.

       4 Coordinates the LCM review
activities of the MAISRC staff, including preparation and
distribution of the AIS program summary to the MAISRC members.

       5 Reviews supporting LCM
documentation and distributes it to the MAISRC members.

       6 Prepares each SDM for
coordination.

       7 Issues and periodically updates,
guidance for submission of a Quarterly Major Automated Information
System Status Report, RCS: DD C3I(Q) 1799, and ensures reporting
compliance.

       (f) Ensure the MAISRC staff members, within their
areas of responsibility:

       1 Promptly review each major AIS
program and its supporting documentation to assess program status.

       2 Support their respective MAISRC
member and assist in developing the MAISRC member's position.

       3 If required information is not
provided or is incomplete, notify the lead acquisition authority in
writing, in coordination with the MAISRC Executive Secretary and the
OSD PSA or the designated representative, of the deficiency.

       4 Provide other members of the
MAISRC staff in a timely manner prior to the MAISRC meeting,
insights, findings, and conclusions resulting from the detailed
review of major AIS program activities and documentation.

5 Provide a written analysis to the MAISRC Executive Secretary for incorporation into the AIS program summary eight days prior to the MAISRC review.

2. The OSD Principal Staff Assistant (PSA) and Chairman, Joint Chiefs of Staff (CJCS), within their areas of responsibility, shall:

a. Establish and assign responsibilities to execute procedures to verify DoD Component compliance with relevant functional policies, requirements, plans, procedures, and priorities.

b. Assess DoD Component readiness for a MAISRC review, validate or revalidate the AIS Mission Need Statement (MNS), and verify AIS program compliance with DoD Directive 8120.1 (reference (c)).

c. For major AISs, provide each validated and revalidated AIS MNS to the MDA for review in accordance with DoD Directive 8120.1 (reference (c)) and enclosure 3 of this Instruction.

d. Participate in the LCM review process for major AISs conducted by the acquisition authority designated to lead acquisition of the AIS.

3. The Assistant Secretary of Defense for Program Analysis and Evaluation (ASD(PA&E)) shall:

a. For all AISs designated for MAISRC oversight, review and validate, at appropriate LCM reviews, AIS program cost estimates, life-cycle cost estimates, independent cost estimates, benefit analyses and functional economic analyses.

b. Develop and maintain guidance on requirements for AIS program cost estimates, life-cycle cost estimates, independent cost estimates, benefit analyses, functional economic analyses, and requirements for validation of major AIS cost estimates, for publication in DoD 7920.2-M (reference (b)). Input for DoD 7920.2-M will be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

4. The Comptroller of the Department of Defense shall:

a. Perform program and budget analysis consistent with the Planning, Programming, and Budgeting System (PPBS).

b. Ensure the Milestone Decision Authority's decisions are reflected in the development of the Defense budget.

5. The Under Secretary of Defense for Acquisition shall ensure:

a. The Director, Test and Evaluation:

(1) Assesses and validates, at MAISRC reviews, AIS program compliance with applicable developmental test and evaluation planning policies and procedures.

(2) Serves as the focal point for coordination of the Test and Evaluation Master Plan (TEMP) and approves the TEMP for each major AIS.

(3) Designates observers to be present during developmental test and evaluation activities as required to assess

test preparation and execution, and test results.

        (4) For each major AIS program or selected program increment, provides the Milestone Decision Authority with an assessment of the developmental test and evaluation conducted by the lead acquisition authority.

        (5) In coordination with the Director, Operational Test and Evaluation, develops and maintains guidance for AIS program test and evaluation planning and TEMP preparation for publication in DoD 7920.2-M (reference (b)). Input for DoD 7920.2-M will be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

    b. The Director, Acquisition Policy and Program Integration determines whether program plans adhere to acquisition management policies and guidance.

  6. The Director, Operational Test and Evaluation (DOT&E) shall:

    a. Assess and validate, at MAISRC reviews, AIS program compliance with applicable operational test and evaluation planning policies and procedures.

    b. Approve the TEMP for each major AIS.

    c. Approve the organizational structure of the group assigned to plan, conduct, and report on the major AIS operational test and evaluation.

    d. Approve operational test plans, monitor operational test and evaluation of AIS programs or selected program increment, in accordance with DoD Instruction 5000.2 (reference (e)), and provide the test and evaluation results to the Milestone Decision Authority.

    e. Provide guidance for publication in DoD 7920.2-M (reference (b)) on the development of critical operational test criteria used to evaluate the operational effectiveness and suitability of the AIS. In coordination with the Director, Test and Evaluation, develop and maintain AIS guidance for program test and evaluation planning and TEMP preparation for publication in DoD 7920.2-M (reference (b)). Input for DoD 7920.2-M will be provided within 120 days of issuance of this Instruction and within 90 days of guidance updates.

  7. The Chairman, Joint Chiefs of Staff (CJCS) shall ensure the appointed representative(s) determines compliance of AIS planning with joint policies and guidance.

  8. The Heads of the DoD Components shall:

    a. Establish AIS LCM oversight bodies comparable to the MAISRC to review delegated major AIS programs and for major and nonmajor AIS programs for which the Component has been designated the lead acquisition authority.

    b. Provide to the MAISRC Executive Secretary, within ten days of the review, a copy of the briefing slides, minutes and System Decision Memorandum (SDM) documenting each AIS LCM review of a major AIS or delegated major AIS conducted by the Component.

    c. Validate AIS program readiness for MAISRC review.

d. Provide each new or updated AIS MNS to the sponsoring OSD PSA or CJCS or the designated representative for validation. e. Notify the MAISRC Executive Secretary when there is a program baseline breach, in accordance with DoD 7920.2-M (reference (b)).

f. Submit to the MDA, alternative funding plans, or offsets, for those AIS programs underfunded at the time of a MAISRC review.

F. PROCEDURES

1. LCM Reviews. Two types of reviews are held in support of LCM oversight. Both types of reviews may result in decisions and guidance being issued. Results of all reviews shall be documented.

a. Milestone review. The MAISRC conducts major AIS milestone reviews to formally evaluate the completion of minimum required LCM accomplishments and exit criteria as defined in DoD Directive 8120.1 (reference (c)).

b. In-process review (IPR). The MDA may require an IPR of a major AIS program at any time. This includes AIS programs for which milestone decision authority has been delegated. The purpose of an IPR is to determine current program status, progress since the last MAISRC review, program risk and risk reduction measures, and potential program problems that require guidance. An IPR will be required:

(1) when the period of time between milestones, AIS program complexity, or AIS program risks warrant review;

(2) when there is a breach of the AIS program baseline; or

(3) at the discretion of the MDA.

2. Documentation

a. Milestone Review. The System Decision Paper (SDP) is the primary information source for a milestone review. The SDP is assembled in accordance with DoD Manual 7920.2-M (reference (b)) from existing program management documentation and summarizes the status of the AIS program. The MAISRC Executive Secretary may request the submission of supplemental program information.

b. In-Process Review. Documentation required from the AIS Program Manager to support an IPR shall be based on the objective of the IPR, the LCM phase of the AIS program, the need to evaluate AIS progress toward the next LCM milestone, program issues, and other MAISRC concerns. Documentation in support of an IPR shall be assembled from existing program management documentation, supplemented only by additional material required to support specific issues to be addressed by the IPR.

3. Quarterly Major Automated Information System (AIS) Status Report, RCS: DD C3I(Q) 1799. The Quarterly Major Automated Information System (MAIS) Status Report shall be prepared in accordance with DoD Manual 7920.2-M (reference (b)).

4. Delegation of Major AIS Program Milestone Decision Authority. Delegation of milestone decision authority may be made at any point in the life-cycle. Delegation of this authority shall be documented. The following factors shall be considered in reaching a delegation decision:

a. The MDA determines, with recommendation from the MAISRC, program status is acceptable, and technical and program risks are acceptable and managed well.

b. Program planning and evaluation activities, required by DoD Directive 8120.1 (reference (c)) and this Instruction, have been completed successfully and are documented adequately.

c. The funding of the AIS program supports approved program plans.

5. Withdrawal of Delegation of Major AIS Program Milestone Decision Authority. Delegation of milestone decision authority may be withdrawn by the DoD MDA at any time. A breach of the baseline or of the criteria listed below will cause an LCM review under the auspices of the DoD MDA, to determine whether delegation of milestone decision authority is to be withdrawn.

a. Oversight of the AIS program, as required by DoD Directive 8120.1 (reference (c)) and this Instruction, is not adequate.

b. Significant questions or issues have surfaced in the execution of the acquisition strategy and associated procurement actions.

c. Program planning or program execution conflict with DoD policy.

6. Approval Process Relationships to the Planning, Programing and Budgeting System (PPBS).

a. AIS LCM complements the PPBS process and supporting functional economic analyses. At LCM milestones, key resource decisions and issues related to future AIS plans, program management structure, total anticipated benefits, development progress, and operational effectiveness and suitability are assessed against affordability constraints and other Department, Component and/or functional area resource demands. Each milestone approval must fit into the affordability constraints established by estimates of projected DoD fiscal resource requirements and documented through functional economic analyses. Individual program plans must be consistent with overall DoD planning and funding priorities.

b. LCM milestone decisions are reflected in the Defense Program and verified by the Comptroller of the Department of Defense. The MAISRC expects to review a fully executable AIS program at each LCM milestone.

c. The Program Objectives Memorandum (POM) provides supporting information on AISs in the information technology budget exhibits ("43-series") in accordance with DoD 7110.1-M (reference (f)).

d. Resources required to support approved AISs will be included in budget submissions in accordance with the most current POM preparation instruction and the annual budget guidance. Differences between costs or schedules presented at a MAISRC review and the POM or budget submission shall be noted and explained in the relevant PPBS submission.

e. If there are differences that impact the AIS program in approved or proposed POM or budget submissions from what was presented

to the MAISRC at the last review, the DoD Senior IM Official shall be notified by the Component responsible for developing the POM or submitting the budget.

G. EFFECTIVE DATE AND IMPLEMENTATION

1. This Instruction is effective immediately.

2. Forward one copy of implementing documents to the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence within 120 days.

3. This Instruction shall not be supplemented without the prior approval of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence.

4. DoD Component Heads shall distribute this Instruction to the Program Manager and appropriate field operating command level within 120 days of receipt.

Duane P. Andrews

Assistant Secretary of Defense

(Command, Control, Communications and Intelligence)

Enclosures - 3

1. References, continued

2. Definitions

3. Life-Cycle Management Phases and Milestones

REFERENCES, continued

(e) DoD Instruction 5000.2, "Defense Acquisition Management Policies and Procedures," February 23, 1991

(f) DoD 7110.1-M, "Budget Guidance Manual," July, 1992

(g) "Technical Reference Model for Information Management," Version 1.2, May 15, 1992

(h) DoD Directive 4630.5, "Compatibility and Interoperability of Tactical Command, Control, Communications, and Intelligence Systems," October 9, 1985

(i) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource Management," October 17, 1972

(j) "Human Computer Interface Style Guide," Version 1.0, February 12, 1992

(k) DoD Memorandum, "Interim Management Guidance on Functional Process Improvement," August 5, 1992

(l) DoD 5000.52-M, "Career Development Program for Acquisition Personnel," November 15, 1991, authorized by DoD Directive 5000.52, October 25, 1991

(m) Public Law 97-86, "Department of Defense Authorization Act, 1982," December 1, 1981, (Title 10, United States Code, Section 2315, Chapter 137) (Warner Amendment)

(n) DoD Directive 7740.1, "DoD Information Resources Management Program," June 20, 1983

DEFINITIONS

1. Exit Criteria. Program-specific accomplishments that must be satisfactorily demonstrated before an effort or program can progress further in the current life-cycle management phase or transition to the next life-cycle management phase. Exit criteria may include such factors as critical test issues, the attainment of projected growth curves and baseline parameters, and the results of risk reduction efforts deemed critical to the decision to proceed further. Exit criteria supplement minimum required accomplishments and are specific to each life-cycle management phase.

2. In-Process Review (IPR). An LCM review between LCM milestones to determine the current program status, progress since the last LCM review, program risks and risk reduction measures, and potential program problems. The Milestone Decision Authority (MDA) shall issue program guidance as a result of an IPR.

3. Major Automated Information System Review Council (MAISRC). The DoD AIS LCM review authority for each major AIS subject to review under the procedures of DoD Directive 8120.1 (reference (c)). The MAISRC is composed of the MAISRC Chair, MAISRC members, the MAISRC Executive Secretary, and the MAISRC staff. The MAISRC is the senior advisory body to the MDA, providing advice on program readiness to proceed into subsequent LCM phases and as to whether proposed plans for subsequent LCM phases are consistent with sound management practices.

4. MAISRC Members.

The MAISRC members are:

a. OSD Principal Staff Assistant (PSA), or equivalent official, providing management responsibility for the functional area supported by the AIS subject to review.

b. Assistant Secretary of Defense for Program Analysis and Evaluation (ASD(PA&E)).

c. Assistant Secretary of Defense for Reserve Affairs (ASD(RA)), when appropriate.

d. Comptroller of the Department of Defense.

e. Deputy Assistant Secretary of Defense (Defensewide Command, Control, and Communications) (DASD(D-WC3)).

f. Deputy Assistant Secretary of Defense (Counterintelligence and Security Countermeasures) (DASD(CI&SCM)).

g. Director, Acquisition Policy and Program Integration, OUSD(A).

h. Director, Test and Evaluation, OUSD(A).

i. Director, Operational Test and Evaluation (DOT&E).

j. Representative(s) of the Chairman, Joint Chiefs of Staff.

k. Senior Acquisition Authority or the designated
representative for the AIS program subject to MAISRC review.

l. Other members, at the discretion of the MDA.

5. MAISRC Staff. Action officers assigned by
each MAISRC member.

6. Program Baseline Breach. A condition that
occurs when the program deviates from the approved baseline. A breach
of baseline occurs when the cost shown in the baseline agreement is
estimated to increase by more than 15 percent during the system
development phase, there is a projected schedule slippage of 90 days,
or there are modifications to approved program funding which result
in a nonexecutable baseline.

7. Standards Profile. A collection of
information technology standards based on the Technical Reference
Model for Information Management (reference (g)), which are
appropriately tailored, integrated and used together to satisfy a
functional need.

8. Other terms used in this Instruction are defined in DoD
Directive 8120.1 (reference (c)).

LIFE-CYCLE MANAGEMENT PHASES AND MILESTONES

OVERVIEW

This enclosure describes the Life-Cycle Management (LCM) Phases
and Milestones for the design, development, deployment and operation
of Automated Information Systems (AISs), as defined in DoD Directive
8120.1 (reference (c)). The activities and conditions to initiate and
complete each phase and milestone are defined. LCM milestones are to
ensure user requirements are met and provide a standard set of
decision points for senior management involvement.

AIS PROGRAM STRATEGIES

A program strategy is the method utilized to design, develop, and
deploy an AIS through its life cycle. There are four "program
strategies" which may be considered by AIS Program Managers and
approved by the Milestone Decision Authority (MDA). The program
strategies are "Grand Design", "Incremental", "Evolutionary", and
"Other", and are defined as follows:

a. Grand Design program strategies are
characterized by acquisition, development, and deployment of the
total functional capability in a single increment. The required
functional capability can be clearly defined and further enhancement
is not foreseen to be necessary. A grand design program strategy is
most appropriate when the user requirements are well understood,
supported by precedent, easily defined, and assessment of other
considerations (e.g., risks, funding, schedule, size of program,
early realization of benefits) indicates a phased approach is not
required.

b. Incremental program strategies are generally
characterized by acquisition, development, and deployment of
functionality through a number of clearly defined system "increments"
that stand on their own. The number, size and phasing of the
"increments" required for satisfaction of the total scope of the
stated user requirement must be defined by the AIS Program Manager in
consultation with the functional user. An incremental program

strategy is most appropriate when the user requirements are well understood and easily defined, but assessment of other considerations (e.g., risks, funding, schedule, size of program, early realization of benefits) indicates a phased approach is more prudent or beneficial.

c. Evolutionary program strategies are generally characterized by the design, development, and deployment of a preliminary capability that includes provisions for the evolutionary addition of future functionality and changes as requirements are further defined. Evolutionary developments are conducted within the context of a plan for evolution towards an ultimate capability. The total functional requirements the AIS is to meet are successively refined through feedback from previous increments and reflected in subsequent increments. Evolutionary program strategies are particularly suited to situations where, although the general scope of the program is known and a basic core of user functional characteristics can be defined, detailed system or functional requirements are difficult to articulate (for example, decision-aiding systems requiring extensive human-machine interaction).

The evolutionary program strategy differs from the incremental program strategy because the total functional capability is not completely defined at inception but evolves as the system is built.

d. Other program strategies are intended to encompass variations and/or combinations of the above program strategies, or newer program strategies not yet defined, e.g., OMB Circular A-109 acquisitions, Commercial-Off-The-Shelf and Nondevelopmental Item (COTS/NDI) acquisitions.

AIS LCM PROCESS

Tasks applicable to each LCM phase and the decision process for each milestone are described below. These tasks are essentially the same for all program strategies prior to the Milestone I decision. Subsequent tasks will be tailored to the program strategy approved at Milestone I.

The proposed program strategy will be outlined during the Concept Exploration and Definition Phase (Phase 0) and approved at the Milestone I review. For those isolated cases requiring earlier decision, the program strategy may be proposed by program management and approved by the Milestone Decision Authority (MDA) prior to the Milestone I decision. The program strategy may be modified, to include deviation from the minimum required accomplishments at milestone decision points, upon approval by the MDA. Procurement and development may not be initiated prior to specific authorization.

Rapid prototyping may be used throughout the LCM process. The concept of rapid prototyping may be used to support analyses performed during the Concept Exploration and Definition Phase and the Demonstration and Validation Phase. Additionally, rapid prototyping may be used to develop a subset of functional capability and to export that subset to a limited user community before traditional delivery of functionality in whichever program strategy is selected. The use of rapid prototyping must be approved at the milestone decision point prior to its use.

Depending on the selected program strategy, combined or repeated milestone decision points and associated activities within the life-cycle phase may be required. The number of replicated milestone decision points, and how increments between these repeated decision

points are reviewed, will be specified in the proposed program strategy for approval at Milestone I. For example, in an evolutionary program strategy, there may be multiple Milestone II and Milestone III decision points, depending upon the amount of functionality provided in each increment. Replicated milestone decision points implies repeating the phases preceding the milestone decision points. A second example is the use of GOTS/COTS/NDI products, requiring no custom changes, may result in the consolidation of the LCM Demonstration and Validation Phase and the Development Phase. In this case, a combined Milestone II/III approval is justified. Similar tailoring may be applicable to migration systems.

Determination of the appropriate LCM phase for AISs designated to evolve to migration or standard systems shall be made by the MDA. AISs designated as migration or standard systems by an OSD Principal Staff Assistant (PSA), may require validation/revalidation of previous milestone decisions at an appropriate LCM review.

At each milestone decision point, assessments shall be made of the status of program execution and the plans for the next phase and the remainder of the program. The risks associated with the program and the adequacy of risk management planning must be explicitly addressed. Additionally, program-specific results to be required in the next phase, called exit criteria, shall be established.

Exit criteria are critical results that must be attained during the next life-cycle phase. They can be viewed as gates through which a program must pass during the phase. They can include, for example, the requirement to achieve a specified level of performance in testing or conduct a critical design review prior to committing funds for long lead item procurement.

Contracting activities must support the acquisition strategy by imposing the linkages between contract events and demonstrated accomplishments in development and initial production and the milestone decisions. The events set forth in contracts must also support the exit criteria for the phase.

MINIMUM REQUIRED ACCOMPLISHMENTS

In addition to the minimum required accomplishments applicable at specific LCM phases, the following minimum required accomplishments apply to each LCM phase throughout the life-cycle, regardless of the program strategy used.

a. The AIS Mission Need Statement (MNS) is prepared in accordance with DoD 7920.2-M (reference (b)), and submitted for validation and approval in accordance with the body of this directive. For C3I systems, the AIS MNS is submitted for validation and approval in accordance with DoD Directive 4630.5 (reference (h)). The following applies to the AIS MNS:

(1) The complete AIS MNS is updated, if appropriate, and revalidated for each milestone review. It also is updated, if appropriate, and revalidated at the time of designation as a migration system.

(2) For incremental and evolutionary program strategies, if the increment under review does not satisfy the complete mission need, the subset of functional requirements defined as the increment are validated at the applicable milestone review.

b. Full consideration is given to the reuse of existing Government-owned AISs and AIS components.

c. Full consideration is given to AIS training, Manpower and Personnel Integration (MANPRINT), maintenance, and logistics requirements. Associated costs and manpower impacts will be factored into the AIS program strategy.

d. Development of security specifications is based on identified security requirements and consideration of potential threats and vulnerabilities.

e. Resources are programmed in the Future Years Defense Plan (FYDP) to satisfy the requirements of the program plan and proposed schedule.

f. Adequate software metrics are defined and used.

g. AIS performance objectives are established and supported by program evaluations and cost/benefits analyses that will be refined in later phases and prepared in accordance with DoD Instruction 7041.3 reference (i).

h. Standards planning, including identification of information technology standards profiles, will be accomplished in accordance with the Technical Reference Model for Information Management (reference (g)) and DoD 7920.2-M (reference (b)).

i. The development of the AIS human computer interface will be accomplished in accordance with the Human Computer Interface Style Guide (reference (j)).

j. Critical operational test criteria, appropriate for the life-cycle phase of the AIS, shall be established in accordance with DoD 7920.2-M (reference (b)).

k. C3I systems will be reviewed for adherence to compatibility and interoperability policy outlined in DoD Directive 4630.5 (reference (h)) at each review.

l. All appropriate documentation, in accordance with DoD 7920.2-M (reference (b)), shall be completed and forwarded to the appropriate oversight body for review.

LIFE-CYCLE PHASES AND MILESTONES

Functional process improvement precedes initiation of the LCM phases and continues throughout the LCM phases. It involves the streamlining and standardization of current processes, data and AISs across the DoD. The OSD PSAs have the responsibility and authority to define functional requirements, and to evaluate and improve current processes, data, and supporting AISs. This is an iterative process, beginning with elimination of non-value added activities, and continuing through increasingly rigorous analyses to identify changes in the way missions and functions are accomplished. OSD PSAs are to exercise this responsibility and authority in accordance with DoD Memorandum (reference (k)). During this process a mission need is defined or revised and an AIS may be developed or modified. At this point, the LCM process described in DoD Directive 8120.1 (reference (c)) and this Instruction is followed, starting at the appropriate LCM phase.

During the AIS mission need justification process the functional user defines and documents a mission need and validates that need. The need justification process begins when the functional user recognizes a mission deficiency or an opportunity to improve mission

performance, and initiates a functional process review and
information needs analysis to define and document that need; it ends
with approval of the AIS MNS by the appropriate OSD PSA or the
designated representative.

The OSD PSA or the designated representative ensures that the
following areas of planning and evaluation are completed and
documented in the AIS MNS.

     a. Identification of the mission.

     b. Description of the existing functional processes,
procedures, and capabilities.

     c. Description of the mission deficiencies or opportunities.

     d. Evaluation of the impact of deficiencies on the
performance of the mission.

     e. Description of the optimization of existing functional
processes and procedures.

     f. Identification of constraints and assumptions for
functional, technical, and financial areas which may impact potential
alternative solutions.

A. MILESTONE 0 - CONCEPT STUDIES DECISION. The purpose of
Milestone 0 is to determine whether to proceed to the Concept
Exploration and Definition Phase based on the definition and
justification of a valid mission need. Approval at Milestone 0
authorizes initiation of the Concept Exploration and Definition Phase
and expenditure of resources for the activities of that phase.

B. PHASE 0 - CONCEPT EXPLORATION-AND DEFINITION PHASE.

1. Purpose. This phase explores alternatives for
satisfying the documented mission need and defines the preferred
program concept. This phase includes development of supporting
analyses and information that identify and evaluate alternative
functional and technical concepts that satisfy the approved AIS MNS.
At completion of this phase, the lead acquisition authority will have
satisfied FIRMR requirements for the completion of a requirements
analysis and an analysis of alternatives. The lead acquisition
authority shall also have selected a proposed acquisition strategy.

2. Initiation of the Phase. This phase begins at
approval of Milestone 0, Concept Studies Decision.

3. Completion of the Phase. This phase ends at Milestone
I after completion of tasks for this phase and approval by the MDA.

4. Minimum Required Accomplishments. In this phase, the
following areas of planning and evaluation shall be successfully
completed, in addition to the minimum required accomplishments
referenced earlier in this document.

     a. Appointment of an AIS Program Manager, in accordance with
DoD 5000.52-M (reference (l)), and the approval of an AIS Program
Manager s Charter.

     b. Identification and prioritization of functional
requirements. The functional requirements for this AIS have been
justified in the overall functional area process analysis.

c. Assessment of alternative functional concepts for performing needed mission activities, including simplification of the business methods.

d. Assessment of alternative technical concepts and architectures that could satisfy the required needs, including reuse of existing software assets.

e. Assessment of the intended uses of the AIS, with particular attention to identifying all uses which meet the criteria of Pub. L. No. 97-86 (Warner Amendment)(reference (m)) exemptions and a written declaration of the Warner determination for any contracts supporting the AIS.

f. Selection of the best program concept to satisfy the mission need based on the results of combining the evaluation of functional and technical alternatives with other key program factors (e.g., acquisition strategy, deployment approach, training, schedule) and their related risks, costs and benefits.

g. Evaluation, selection and approval of the appropriate program strategy to implement the selected program concept.

h. Initial planning for the design, development, testing, deployment, maintenance, and technology refreshment of the proposed AIS.

i. Initial identification of risk areas and definition of risk reduction measures, management approaches and plans.

j. Development of the AIS functional description, to the extent possible, given the selected program concept.

k. Consistency between the proposed program concept and the organization's strategic planning, in accordance with DoD Directive 7740.1 (reference (n)).

l. Definition of the activities to occur for the program concept demonstration(s) and the criteria to evaluate the demonstration(s). The demonstration program(s) shall be designed, coded, tested and implemented to provide basic, or elementary, capabilities across the full range of requirements.

C. MILESTONE I - CONCEPT DEMONSTRATION DECISION. The purpose of Milestone I is to approve the selection of the best program concept to implement the required functional capabilities that satisfy the approved AIS MNS. The Milestone I approval authorizes program management to initiate and expend resources for the activities of the Demonstration and Validation Phase as set forth in the approved program strategy.

D. PHASE I - DEMONSTRATION AND VALIDATION PHASE.

1. Purpose. The activities of this phase will depend upon the approved program strategy.

a. Grand Design. Validate the selected system design and complete the technical specification.

b. Incremental. Design, code, test and demonstrate a subset of functional capability to support the program strategy.

c. Evolutionary. Design, code, test and demonstrate a program which provides basic, or elementary, capabilities within the

context of a plan for evolution towards an ultimate capability.

   d. Other. The activities to be accomplished during this
phase will depend on the specific definition of this program strategy.

   2. Initiation of the Phase. This phase begins at
approval of Milestone I, Concept Demonstration Decision. For
incremental and evolutionary program strategies, recurrences of this
phase may occur. Each recurrence coincides with major increments of
the system's functional capabilities, as defined at Milestone 0
and/or reaffirmed at the previous LCM review.

   3. Completion of the Phase. This phase ends at Milestone
II after completion of tasks for this phase and approval by the MDA.
The end of the phase for each recurrence of an incremental or
evolutionary program strategy results in approval to begin
development of the program increment just validated in the
Demonstration and Validation phase.

   4. Minimum Required Accomplishments. In this phase,
program management ensures the following have been successfully
completed, in addition to those general minimum required
accomplishments referenced earlier in this document:

   a. Grand Design.

      (1) Demonstrations and/or rapid prototyping activities
are successfully completed and results are integrated into the AIS
design.

      (2) Detailed specifications are prepared and documented
for the total system. The AIS design is complete and based on refined
functional requirements, final standards profiles and AIS functional
description.

   b. Incremental.

      (1) Agreement is reached with the user on the
identification of increments and the timing of each increment.

      (2) Demonstrations and/or rapid prototyping are
successfully completed and results are integrated into the design.

      (3) Detailed specifications, including final standards
profiles, are prepared and documented for the total system. The AIS
design is complete and based on functional requirements and AIS
functional description for the increment under development.

   c. Evolutionary.

      (1) Agreement is reached with the user on the approach
to evolve the design and implementation and the first increment of
capability to be provided.

      (2) Demonstration and/or rapid prototyping activities
are successfully completed, providing the expectation the program can
evolve to provide needed capability within anticipated costs and
schedule. Results are integrated into the AIS design.

      (3) Detailed specifications, including final standards
profiles, are prepared and documented for the next increment. The AIS
design is based on functional requirements and functional description,
including anticipated life-cycle requirements growth.

d. Other. The minimum required accomplishments will depend on the specific definition of this program strategy.

E. MILESTONE II - DEVELOPMENT DECISION. The purpose of Milestone II is to assess the adequacy of the program to accomplish the stated mission needs in light of activities accomplished during Phase I. Milestone II approval authorizes program management to initiate and expend resources for the activities of the Development Phase. For incremental and evolutionary programs, resource expenditure is limited to those capabilities approved at this Milestone.

F. PHASE II - DEVELOPMENT PHASE.

1. Purpose. The activities of this phase will depend upon the approved program strategy.

a. Grand Design. Develop the AIS, test the completed AIS to ensure it satisfies mission needs described in the AIS MNS, and prepare for deployment.

b. Incremental. As previously described, the activities in this phase may be repeated. For each recurrence of this phase, code and test the applicable increments of the overall design. Ensure all user agreed capabilities are satisfied. Prepare for deployment.

c. Evolutionary. As previously described, the activities in this phase may be repeated. For each recurrence of this phase, design, code and test the applicable increments as they progress toward an overall design. Ensure all user agreements are satisfied. Prepare for deployment.

d. Other. The activities to be accomplished during this phase will depend on the specific definition of this program strategy.

2. Initiation of the Phase. This phase begins at approval of Milestone II, Development Decision. For incremental and evolutionary program strategies, recurrences of this phase may occur. Each recurrence coincides with major increments of the system's functional capabilities, as defined at Milestone 0 and/or reaffirmed at the previous LCM review.

3. Completion of the Phase. This phase ends at Milestone III after completion of tasks for this phase and approval by the MDA. The end of the phase for each recurrence of an incremental or evolutionary program strategy results in approval to begin deployment of the program increment just validated in the Development phase. An increment must stand on its own merits to receive approval to begin deployment.

4. Minimum Required Accomplishments. In this phase, the following areas of planning and evaluation shall be successfully completed, in addition to the minimum required accomplishments referenced earlier in this document:

a. Grand Design.

(1) Full-scale system development is complete.

(2) Before the initiation of operational testing, security test and evaluation of the AIS shall be accomplished to certify technical security features and other safeguards satisfy the specified security requirements.

(3) Operational testing of the completed AIS validates the AIS meets critical functional user requirements and is ready for deployment and operational use.

(4) Appropriate standards conformance and interoperability testing is complete.

b. Incremental.

(1) The developed increment is complete.

(2) User reaffirmation of capability in succeeding increments has been obtained.

(3) Before the initiation of operational testing, security test and evaluation of the AIS increment shall be accomplished to certify technical security features and other safeguards satisfy the specified security requirements.

(4) Operational testing of the developed increment validates the critical functional user requirements are met and the increment is ready for deployment and operational use.

(5) Appropriate standards conformance and interoperability testing is complete, for the increment to be deployed.

c. Evolutionary.

(1) Development of the planned increment is complete and demonstrates successful progress toward the overall design.

(2) User reaffirmation of capability in succeeding increments has been obtained.

(3) Before the initiation of operational testing, security test and evaluation of the developed increment shall be accomplished to certify technical security features and other safeguards satisfy the specified security requirements.

(4) Operational testing of the developed increment validates the critical functional user requirements are met and the increment is ready for deployment and operational use.

(5) Appropriate standards conformance and interoperability testing is complete, for the increment to be deployed.

d. Other. The exit criteria will depend on the specific definition of this program strategy.

G. MILESTONE III - PRODUCTION DECISION. The purpose of Milestone III is to determine whether the developed AIS or AIS increment has been operationally tested, stands on its own merit, and is ready for deployment. For incremental and evolutionary programs, resource expenditure is limited to those capabilities approved at this Milestone. The Milestone III decision memorandum identifies the MDA for the Milestone IV decision(s) that will occur during the Operations and Support Phase.

H. PHASE III - PRODUCTION AND DEPLOYMENT PHASE.

1. Purpose. The purpose of this phase is to complete the deployment of the AIS in accordance with the approved program plan.

2. Initiation of the Phase. This phase begins at
Milestone III, Production Decision. For incremental and evolutionary
program strategies, recurrences of this phase may occur. Each
recurrence coincides with major increments of the system's functional
capabilities, as defined at Milestone 0 and/or reaffirmed at the
previous LCM review.

    3. Completion of the Phase. This phase ends when
management responsibility for the AIS or AIS increment is transferred
from the AIS Program Manager to an AIS Operations Manager or upon
declaration of operational capability, and completion of other tasks
for this phase.

    4. Minimum Required Accomplishments. In this phase,
program management and AIS operations management ensure the following
have been successfully completed, in addition to the minimum required
accomplishments referenced earlier in this document.

        a. AIS management transition and support planning from the
AIS Program Manager to an AIS Operations Manager is complete.

        b. Post-deployment AIS operational assessment planning for
Milestone IV is complete, to include procedures for collecting and
evaluating benefits, correcting AIS malfunctions, responding to
functional user needs, identifying changes to the approved standards
profiles, and assuring continuous use of approved security
safeguards.

        c. The AIS Program Manager has conducted and submitted an
assessment to the MDA of the success of the program strategy, as well
as the effectiveness of process and quality metrics, effectiveness of
the software development environment, and the overall contribution of
risk reduction techniques.

I. PHASE IV - OPERATIONS AND SUPPORT PHASE.

    1. Purpose. The activities of this phase are to operate
and maintain the AIS, or AIS increments, evaluate the AIS or AIS
increments' effectiveness, and plan for modernization of the AIS or
AIS increments.

    2. Initiation of the Phase. This phase may follow or
overlap Phase III, Production and Deployment Phase. It begins either
upon completion of management responsibility transfer from the AIS
Program Manager to the AIS Operations Manager, or upon declaration of
an operational capability.

    3. Completion of the Phase. This phase ends when the AIS
is modernized or terminated.

    4. Minimum Required Accomplishments. In this phase, the
OSD PSA and AIS operations management ensure the following have been
successfully completed.

        a. Benefits have been collected and evaluated, malfunctions
have been corrected, security safeguards are assured, and operating
procedures have been updated.

        b. The OSD PSA validates mission needs have been satisfied,
operational support of the AIS is satisfactory, and affordability,
performance, and benefits are acceptable.

        c. Planning is completed for evolution of the AIS, including
assessment of whether the existing AIS continues to satisfy validated

mission needs, is to be designated a migration system, requires modernization, or should be terminated.

J. MILESTONE IV - MAJOR MODIFICATION DECISION. At Milestone IV, the OSD PSA or CJCS validates the mission needs are being satisfied. The MDA considers post-deployment AIS operational assessment, to include operational support of the AIS is satisfactory, and affordability, performance, and benefits are acceptable. Consideration of an operational AIS as a migration system or standard system will occur at this milestone decision point. Based on these considerations a decision will be made to continue operation and support, modernize or terminate the AIS. Approval by the MDA to modernize the AIS authorizes AIS post-deployment management to program resources for modernization and to initiate the Concept Exploration and Development Phase.

For the grand design or incremental program strategy, a Milestone IV review will be conducted no later than four years after Milestone III approval and every three years thereafter, or as required when other significant changes (e.g., mission, policy, legal requirements, rapid degradation in AIS performance or maintainability) necessitate. For the evolutionary program strategy, a Milestone IV review will be conducted no later than four years after the Milestone III approval of the first increment and every three years thereafter, or as required when other significant changes necessitate.